

**AMENDMENTS TO THE CLAIMS**

Claims 1-20 (cancelled)

Claim 21 (previously presented): A method of configuring a product from a plurality of product components, the method comprising the steps of:

representing product component knowledge of a plurality of product components in a hierarchical structure, wherein said representing step includes storing product component category information in frames in the form of nodes of the hierarchical structure and storing product component features, options, and attributes in slots for respective nodes of the structure;

outputting a set of product-specific questions related to desired attributes of desired product components;

receiving individual answers to respective ones of the set of product-specific questions, including desired attributes of at least one product component;

removing at least one product-specific question from the output set of product-specific questions, prior to receiving an answer to the at least one product-specific question, in response to answers received in said receiving step;

performing frame-based inferences of the product component knowledge stored in the hierarchical structure based on answers received in said receiving step;  
and

configuring a product with features and options based on the desired attributes of the at least one product component and based on inferences made in said performing step.

Claim 22 (previously presented): The method of configuring as recited in claim 21, wherein said representing step comprises the step of representing the hierarchical structure in the form of a tree, wherein frames of the tree maintain parent-child relationships in which a child frame inherits all of the features and options of a parent frame.

Claim 23 (previously presented): The method of configuring as recited in claim 22, wherein said configuring step further comprises the step of filtering inferences made in said performing step by executing a set of rules on the inferences made so as to produce a product configuration, wherein the product configuration is in the form of a window product.

Claim 24 (previously presented): The method of configuring as recited in claim 21, wherein said removing step comprises the step of removing a given product-specific question in response to invalidation of a slot in a frame corresponding to the given product-specific question.

Claims 25-26 (cancelled)

Claim 27 (amended): A machine-readable recording medium for use in configuring a product assembly from a plurality of product components, the recording medium having stored therein a series of machine-executable program instructions executed by a machine to perform the steps of:

requesting a product type;

prompting a set of product-specific questions selected based on product type requested related to desired attributes of product components;

providing answers to product-specific questions as prompted, including desired attributes of at least one product component;

configuring the assembly using frame-based inferences of a product component knowledge base in response to answers provided;

displaying line drawings of the assembly as configured, wherein the line drawing graphically depicts a type, size and style of the assembly as configured, wherein said displaying step further comprises displaying composite units of the assembly as configured; and allowing custom configuration of the assembly as configured by allowing addition and modification of composite units to the assembly as configured; and

quoting a price for the assembly as configured and displayed.

~~The machine-readable recording medium as recited in claim 26,~~ wherein the series of machine-executable program instructions further comprises the step of

building a product component knowledge base by storing product component information related to window and door products in a hierarchical tree, wherein the hierarchical tree is composed of frames corresponding to different product components and slots within each frame corresponding to attributes of the different product components.

Claim 28 (previously presented): A product configuration system for configuring products from a plurality of product components based on user interaction, the system comprising:

a user interface, wherein said user interface receives answers from the user corresponding to questions output to the user in the form of a display of graphical and textual representations;

a graphics formatting and output subsystem, wherein said graphics formatting and output subsystem performs calculations and preparations for the display of graphical and textual representations to said user interface;

a data storage subsystem, wherein said data storage subsystem is a repository of product information representing knowledge of product components including type, style, size, and attributes;

a configurator subsystem, wherein said configurator subsystem builds product configurations based on data from said data storage subsystem and established data relationships, wherein said configurator includes a core module for facilitating

input and output data in the system, and a frame engine for computing available configuration answers for any configuration questions posed to the user at any time, wherein the frame engine is a frame-based expert system, the frame engine receiving values of answers, including answers related to desired product component attributes, as received by said user interface and performing frame-based inferences of the values of answers to other questions automatically, and generating configuration data representing configuration of a desired product based on the inferences made; and

a data analysis subsystem, wherein said data analysis subsystem accesses and processes data from said data storage subsystem, and wherein said data analysis subsystem includes a pricing engine that uses the configuration data generated by the frame engine to generate pricing for the desired product.

Claim 29 (previously presented): The product configuration system of claim 28, the system further comprising a schematic configurator that displays on said user interface drawings representing the desired product as configured by said configurator subsystem, and allows manipulation and graphical editing of the desired product configuration, wherein the desired product configured is a door assembly.

Claim 30 (previously presented): The product configuration system of claim 28, the system further comprising a product code engine for both generating and receiving as inputs codes associated with component parts included in the product

information stored in said data storage subsystem, wherein said product code engine facilitates input to and output of the system utilizing such codes.